ORIGINAL PAPER

DOI: 10.26794/2587-5671-2020-24-2-6-21
JEL D72, D78, E42, E44, E52, F32, F38, G14, G18, N2

Key Challenges Facing Modern Finance: Making the Financial Sector Serve Society

J.E. Stiglitz
Columbia University, New York, United States
https://orcid.org/0000-0001-6149-046X

ABSTRACT

The purpose of this paper is to discuss the broad issue of how to make the financial sector serve society, at least serve it better than it has until now. Finance has been the centre of attention, for better or for worse, for more than a quarter-century, partly because of its increasing share of GDP, and partly because of the negative behaviour and activities of its professionals. The paper is divided into six parts. The first section concerns the necessity of stopping adverse behaviours (activities). Section II presents some measures aimed at encouraging positive activities and promoting positive behaviour. Section III discusses a crucial issue concerning the urgent need to curb rent-seeking. Section IV discusses taxation in the context of the corrosive effect of tax competition. Section V, using analysis provided, presents measures to enhance the role of government in restoring the public's eroded trust in financial institutions. Finally, Section VI discusses questions about how we can restore trust.

Keywords: regulation; financial crises; boom-busts; Dodd-Frank Act; Great Depression; Great Recession; housing boom; banking; inequality

For citation: **Stiglitz J.E. Key challenges facing modern finance: Making the financial sector serve society. *Finance: Theory and Practice*. 2020;24(2):6-21. DOI: 10.26794/2587-5671-2020-24-2-6-21**

PRELIMINARY CRITICAL REMARKS

I want to begin by first emphasising that the financial sector is vital for the functioning of any economy. No country has been successful economically without a well-functioning financial sector. On the other hand, a malfunctioning financial sector can lead, as it did in 2008, to an economic crisis. In fact, there were a large number of crises around the world before, but the 2008 crisis was the worst after the end of WWII. It was because of deregulation of the financial market, which began in 1980. And most of these crises we can attribute to misbehaviour or misjudgements of the financial sector.

The experience of the crisis should have led us to change our economic models, our economic priorities, and our regulations of the financial sector. We have identified the problems that gave rise to the financial crisis, but our solutions to those problems have been highly incomplete — and are yet at risk of being undone[1].

The big question always centres on systemic risk: To what extent does the collapse of an institution imperil the financial system as a whole? America's financial system failed in its two crucial responsibilities: managing risk and allocating capital. Moreover, many of the worst elements of the US financial system, for example toxic mortgages and the practices that led to them, were exported to the rest of the world. It was all done in the name of innovation, and any regulatory initiative was fought off with claims that it would suppress that innovation. However, we do not overlook political forces that shape regulations over

[1] The Dodd-Frank Wall Street Reform and Consumer Protection Act whose long title is "An Act to promote the financial stability of the United States by improving accountability and transparency in the financial system, to end 'too big to fail', to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes." (Effective July 21, 2010). Regarding the Republican-led rollback of some provisions of Dodd-Frank in 2018, this move from increased regulation after a crisis to deregulation during an economic boom has been a recurrent feature in the United States. See, for example, Dagher JC. Regulatory Cycles: Revisiting the Political Economy of Financial Crises. November 27, 2017. Available at SSRN: https://ssrn.com/abstract=2772373 or http://dx.doi.org/10.2139/ssrn.2772373. See also, for example, "What Does the Partial Rollback of Dodd-Frank Mean for the Largest U.S. Banks?" at https://www.forbes.com/sites/greatspeculations/2018/05/29/what-does-the-partial-rollback-of-dodd-frank-mean-for-the-largest-u-s-banks/#21ce13892f19 or "Congress Approves First Big Dodd-Frank Rollback" at https://www.nytimes.com/2018/05/22/business/congress-passes-dodd-frank-rollback-for-smaller-banks.html.

time. There is a widespread view that financial innovations are much ahead of regulators.

The financial crisis of 2007–2008 was partly determined by a catastrophic collapse in confidence. Financial markets hinge on trust, and that trust has eroded. Moreover, the crisis in trust extends beyond banks. However, before we treat our economy, we first need to determine what is sick [1, 2].

A malfunctioning financial sector can lead to slow growth because of:

- A failure to provide resources necessary to create new businesses and expand existing businesses and therefore to allocate capital well;
- A failure to develop good instruments for risk-sharing;
- Predation draining energy from the vitality of the economy;
- Greater inequality;
- Being the major source of rent-seeking in modern society.

A malfunctioning financial sector can lead to erosion of trust in other institutions:

- Especially in response to flawed response;
- It seemed to reflect capture, revolving door between finance and regulators, lobbying, monster campaign contributions. All tarnished the view that there was "good governance" and enhanced the view that the system was rigged.

The 2008 crisis spawned the "Occupy" movement worldwide and gave rise to the Tea Party.

In recent years, the financial sector of advanced countries has failed in all of these dimensions:

- Reduced flow of funds to small- and medium-sized enterprises;
- Excessive flow of funds to socially harmful sectors — coal, cigarettes;
- Insufficient flow of funds to areas of great social need — green investments (The Green New Deal).

The long list of "misbehaviours":

- Predatory lending;
- Market manipulation;
- Insider trading;
- Abusive credit card practices;
- Exploiting market power (e.g. in credit cards);
- Facilitating tax avoidance/evasion and other nefarious activities;
- Front running (including its modern version, High-Frequency Trading).

All these failures have very broad implications. I argue that the American system of capitalism has fallen down and needs government help to get back up. And I think that Friedmanite self-regulation is an oxymoron. I see an essential role for government in regulation and more active lending. And I stress in my latest book, *People, Power, and Profits: Progressive Capitalism for an Age of Discontent,* that "The view that government is the problem, not the solution, is simply wrong. To the contrary, many if not most of our society's problems, from the excesses of pollution to financial instability and economic inequality, have been created by markets." The true sources of wealth and increases in standards of living were based on education, advances in science and technology, and the rule of law. Therefore, the assault by free- market fundamentalists on the judiciary, in universities, and in the media undermines the very institutions that have long been the foundation of America's economic well-being, and its democracy [3, 4]. It may not be too late to create a ***progressive capitalism*** that will recreate shared prosperity. Too many have made their wealth through the exploitation of others rather than through wealth creation. From this follows the broad agenda:

- Stop adverse activities;
- Encourage positive activities;
- Curb rent-seeking activity;
- Make tax avoidance and tax heavens impossible;
- Rebuild a positive role for government;
- Restore trust in state institutes and democratic values.

I'm going to discuss six areas within this broad agenda of trying to make sure that the financial sector can serve society. And in each of these areas, I'm going to try to illustrate how advances in theoretical work and the analytics, and empirical research, explain these failures and what the government, what society, can do to address those failures.

What I'm going to do is highlight the nature of the pervasive imperfections in the markets and the kinds of potential remedies to these failures.

1. STOPPING ADVERSE BEHAVIOURS

The U.S. finance, insurance and real estate (FIRE) sector accounted in the middle of 2019 for about 7.4 per cent of GDP. It increased from 2.5 per cent of US GDP after the end of WWII to about 8 per cent before the financial crisis. Moreover, those in the financial sector earned very high incomes. But there was a big mistake made in many countries. They thought that the high incomes meant that the sector was highly productive, that it was promoting the economy's growth and its stability. And that the bankers were being rewarded for their societal contributions in line with standard principles of economics, neoclassical economics. And these are perspectives that dominated the economics profession since Adam Smith.

But researchers provided a different interpretation of what was going on; in fact, the data showed that as the percentage of GDP that went to finance increased, growth was slower. The economy was more unstable. The process of financialisation was more related to the growth of inequality. And it was not just correlation, it was causation. And the causation was actually related not only to the growth of inequality but to the slowing down of the economy [5]. And it is related to a concept that economists referred to as ***rent-seeking***.

Experience showed us then the market participants were engaging in behaviour with excessive risk-taking, which can put the financial system on the brink of collapse. This excessive risk-taking is a "Mother of all Moral Hazards" because, usually, a moral hazard exists when an entity engages in risk-taking behaviour based on a set of expected outcomes in which another entity bears the costs in the event of an unfavourable outcome. However, among the set of expected outcomes can also be the state's promise of bailouts or any other indemnity guarantee. Further, extreme risk-taking behaviour is exacerbated by the expected promise of a bail-out. It creates one-sided bets and lowers the cost of funding (no bankruptcy risk premium) for "too big to fail" banks, distorting the financial sector, exacerbating unhealthy risk-taking and the size of eventual bailouts[2].

Such excessive risk-taking can take on many forms, including the excessively rapid expansion of credit (by any institution, of any type of credit), which is a strong predictor of troubles down the line. But to be "too big to fail" is only one side of the story. Many economists were devoting their research to getting around standards and regulations designed to ensure the efficiency of the economy and the safety of the banking system. Unfortunately, they were far too successful. They paid particular attention to the structure of the financial system. Another aspect is the existence, and growing share, of shadow banking systems. Shadow banking primarily represents a risk because of the lack of stability of the source of funding and government oversight.

It is not just the problem of being a "too big to fail" bank but, first of all, of being "too interconnected (too intertwined) to fail" and "too correlated to fail." Interlinked banks can lead to a systemic crisis (e.g. in the aftermath of the failure of Lehman Brothers). Interlinkages and connectedness are associated with the so-called *domino effect*, chain reactions caused by something unexpected in one node of the network. Dense networks can absorb small shocks but amplify big shocks, and make it difficult to organise an efficient "bail-in" — where other banks contribute to preventing bankruptcy cascade.

Greenwald and Stiglitz [3] developed formal models of debt deflation and a theory of monetary policy focusing on the role of credit. In this book, we explain the other factors that affect lending — among which is the risk, which has only grown worse as the economy's woes have deepened. With Gallegati and other co-authors, we explored the credit interlinkages that have played such an essential role in this crisis. These models explore the possibility of bankruptcy cascades. They explain how global financial integration may serve not only to share risk but also to facilitate contagion, as a failure in one part of the economic system — in this case, the US — spreads around the world [6–8].

There are two ways of becoming wealthy. One is to increase the size of the national pie. That is called wealth-creation. And the other is to steal a bigger share of the pie for yourself. And that is called rent-seeking or rent-grabbing. And much of the income in the financial sector was associated with this kind of rent-seeking activity, wealth-grabbing — exploitation of one kind or another.

Research in basic economics and finance has helped to see more clearly what is going on. We have come to understand better what a well-functioning financial market looks like. Ideas like the Modigliani-Miller Theorem [9][3], informationally efficient markets, capital asset pric-

[2] In 2009 the Financial Stability Board (FSB) started to develop a method to identify systemically important banks to which a set of stricter requirements would apply. **SIB** is the abbreviation for Systemically Important Bank. The term **SIFI** is the abbreviation for Systemically Important Financial Institution, which in addition to banks also includes insurance companies and financial market infrastructure providers deemed systemically crucial by regulators. There are separate lists of global systemically important banks, **G-SIBs**, domestic systemically important banks **D-SIBs (**known in Europe as "national SIFIs") and regional systemically important banks **R-SIBs.**

[3] Franco Modigliani was awarded the 1985 Nobel Prize in Economics for this and other contributions. Merton Miller was awarded the 1990 Nobel Prize in Economics (along with Harry

ing, Arrow-Debreu securities — all these clarify what a perfect market *would theoretically* look like. And what we know now is that the market that we see is very imperfect. While I was still a graduate student at MIT, I began to suspect that something was wrong with the Modigliani-Miller theorem [10, 11].

In my paper "Modigliani, the Modigliani-Miller Theorem, and Macroeconomics", presented to a conference, "Franco Modigliani and the Keynesian Legacy," at The New School from April 14 and 15, 2005, I analysed the Modigliani-Miller theorem in retrospect. I wanted to focus on the *indirect* contribution that Modigliani exerted on macroeconomics through his pioneering work with Merton Miller on corporate finance.

The most important conclusion of Modigliani and Miller was that corporate financial policy makes no difference to how the firm actually finances its investment. It means that the value of the firm is independent of how it was financed. Therefore, an immediate corollary is that the cost of capital does not depend on how the firm was financed. Besides theoretical aspects, for thousands of people working on Wall Street in corporate finance, Modigliani had shown that they did not know what they were doing.

And much of the research I am going to describe here is an attempt to understand why the market looks so different from a world depicted by the perfect market, perfect information, perfect competition etc.

But to give you just one example of how different the standard theory and the actual practice are, let me refer to some of the discussion that occurred in the years before the 2008 crisis.

A standard view of financial markets that is taught all over the world says that if you diversify your risk, you will become more stable. And unfortunately, many of our policymakers in Washington and at the IMF up until now believe what they were taught in the universities. They believe that a more diversified financial market is more stable. Hence, there were profound implications for how they responded to the crisis as it began to develop.

So, for instance, after the real-estate bubble broke in the United States in 2006, the crisis started to get even worse in 2007[4] and then finally it fell apart in 2008 when Ben Bernanke was the Chairman of the Federal Reserve[5]. Was he worried about the collapse of the housing market? He said, "No". He wasn't worried because we had a very highly diversified financial system! He was obviously wrong. We did have a crisis. And because he felt so relaxed, he didn't do what he should have done to prevent the economy from the worst major downturn since the Great Depression that began in 1929.

So, in the last 25–35 years, all the ideas that underlie a perfect market and a perfect financial market have been questioned. Let's take once more as an example the Modigliani-Miller theorem that says that the financial structure of a corporation does not matter. But the question is when and why it does not matter.

To me, it was so amusing that so many business schools taught the Modigliani-Miller theorem and took it seriously because half of New York's Wall Street is concerned with figuring out the optimum financial structure. And none of those people believes that the financial structure doesn't matter. So, we were teaching our students that according to the most important theorem in finance — the Modigliani-Miller theorem — financial structure doesn't matter. Yet it was evident that it did matter!

Another example is the research of Robert Shiller[6], who also gave a talk here in the same series. He got his Nobel Prize for showing that financial markets are not informationally efficient. Shiller is the co-creator of the widely followed Case-Shiller home price index, which quantifies shifts in U.S. housing prices. In the early 2000s, housing prices in the United States and several other nations rose to levels far above traditional valuations relative to rents. As Shiller's work predicted, this was driven by *excessive optimism* about future prices: about people getting rich by flipping houses, which contributed to a belief that house

---

Markowitz and William F. Sharpe) specifically for "fundamental contributions to the theory of corporate finance".

[4] When on April 2007 New Century, an American real estate investment trust specialising in sub-prime mortgages, filed for Chapter 11 bankruptcy protection.

[5] Ben Shalom Bernanke was 23rd Chairman of the Council of Economic Advisers (June 21, 2005 — January 31, 2006), Member of the Board of Governors of the Federal Reserve (July 31, 2002 — January 31, 2014), 14th Chair of the Federal Reserve (February 1, 2006 — January 31, 2014). On February 20, 2004, Bernanke gave a speech in which he postulated that we are in a new era called the Great Moderation, aka the Bernanke Doctrine. It was also the time when the Fed initiated Quantitative Easing, creating $1.3 trillion from November 2008 to June 2010 and using the created money to buy financial assets from banks and the government. In 2005, Bernanke coined his another famous term 'saving glut'.

[6] He presents results of his last research in Shiller Robert J. Narrative Economics: How Stories Go Viral and Drive Major Economic Events. Princeton, NJ: Princeton University Press; 2019.

prices would always go up. He names these stories *narratives*, which spread economic uncertainty, discouraging consumer spending and business investment. So, financial markets do not efficiently reflect available information, contrary to the Efficient Markets Hypothesis (the position of Eugene Fama).

Also, I would like to mention my work with Sanford (Sandy) Grossman decades ago, beginning in 1976 and continuing into the 1980s, where we showed that in reality markets *could not* be informationally efficient [12–15].

If markets were informationally efficient, nobody would have any incentive to gather any information, and so the market would not be informative at all.

So, what I want to try to explain is the need to understand why financial markets differ from the way they are theoretically characterised, and that assumptions of perfect markets, perfect information, the perfect competition, really do make a difference. And I hope it is understandable why the financial sector has not performed the functions it was thought it would perform and why the financial sector hasn't served society.

Besides, a malfunctioning financial sector can lead to slow growth. The reason for this is again easy to understand. The economy always needs to provide the resources necessary for creating new businesses and extending existing businesses. For example, some critical problems are facing small businesses, and lack of funding was at least one of them. The failure to allocate capital wealth will limit growth; the failure to develop instruments for sharing risk will limit growth as well. So, predation and exploitation sap energy from the vitality of the economy.

It is also the case that a malfunctioning financial sector can lead to the creation of inequality. As I mentioned above, it's a major source of rent-seeking. A malfunctioning financial sector not only affects the economy, but it also affects society more generally because it can lead to erosion of trust in other institutions. The way the US government responded to the financial crisis meant that a lot of people developed a lack of trust in government. They said the government had failed to regulate the banks adequately, but then when we had a crisis, the bankers cut off the money and undermined trust in society.

Maybe I should tell a little story of how I was on a small conference call with Barack Obama right after Lehman Brothers filed for Chapter 11 bankruptcy protection on September 15, 2008, after the Federal Reserve declined to guarantee its loans and prior to the beginning of the financial crisis. The question was, "President Bush had proposed a 700 billion dollar bailout of the banks." And I do not know if you know, 700 billion dollars is a lot of money. But the first questions in this conference call were mostly from the bankers. The first question of the bankers was, "Why only 700 billion dollars?" And the political answer was, "Don't worry, if you need more money there'll be some more, but we thought that a trillion dollars sounded too big". So, it was a political answer, not an economic answer[7].

Unfettered and under-regulated financial markets do not work, and the current regulation and regulatory institutions failed — partly because one is not likely to get effective regulation when there are regulators who do not believe in regulation.

The response to the crisis seems to reflect the captured government by the financial sector exhibiting a revolving door between finance and the regulators, with the Secretary of Treasury coming from Goldman Sachs or some other large bank over and over again.

It reflected the lobbying, the huge campaign contributions, which all tarnished the view that there was good governance and hence the view that the system was great. It gave rise to the Occupy movement worldwide. And it gave rise to the Tea Party movement and then, in turn, gave rise to the extreme politics that we are now experiencing — populism and nationalism as well. So, these failures have consequences not just for the economy but for our politics and for our society.

There is also an excessive flow of funds to socially harmful sectors like coal and cigarettes, and a reduced flow of funds to small- and medium-sized enterprises; there is an insufficient flow of funds to areas of greater social need such as green investments; there is a long list of misbehaviours like predatory lending, market manipulation, insider trading, abusive credit card practices, exploiting market power, facilitating tax avoidance, front-running, and its modern form — high-frequency trading.

[7] The Emergency Economic Stabilization Act of 2008, often called the "bank bailout of 2008," was signed into law by President George W. Bush. The act became law as part of Public Law 110–343 on October 3, 2008. The law created the Troubled Asset Relief Program (TARP) to purchase distressed assets from financial institutions with the $700 billion funds to purchase toxic assets from banks. Estimates for the total cost of the bailout to the government are as much as $29 trillion [3]. See Felkerson J. $29,000,000,000,000: A Detailed Look at the Fed's Bailout by Funding Facility and Recipient. *The Levy Economics Institute Working Paper No. 698;* December 2011. URL: http://www.levyinstitute.org/pubs/wp_698.pdf.

And, taken together, what this implies is that there's an important role for government. But of course, if the government is going to perform this role, there have to be good public institutions. That means that if your financial sector is going to work, you have to have a good regulatory sector as well.

The implication is very clear that unfettered and underregulated financial markets do not work and can be very corrosive to the economy and society, so that means you have to have an effective way of regulating them. Moreover, the current regulation and regulatory institutions have failed — partly because one is not likely to get effective regulation when there are regulators who do not believe in regulation.

In the aftermath of the 2008 crisis, most of the discussion focused on the excessive risk-taking that contributed to the 2008 crisis and what were some of the reasons behind that excessive risk-taking. One of the things that was pointed out was that when you have banks that are too big to fail there is a one-sided bet: If they undertake risk and it works out, they walk off with a lot of profits, but if things don't work out, well, the government will endeavour to bail them out.

So obviously, if you have a one-sided bet you take a big bet. When things turned out well, the bankers did very well. But when they didn't turn out well, as in 2006–2008, society pays an enormously high price.

In many ways, 2008 was a particular example, where the banks were in one particular area, in mortgages, but if you look around the world at different crises, one of the forms they can take is excessive lending, the excessive rapid expansion of credit.

And the evidence is pretty clear that the rapid expansion of credit by any institution, of any type of credit, is the wrong predictor of trouble down the line.

The issue of "too big to fail" banks now gets a lot of attention, but it's not the only problem. There's also a problem with the shadow banking system, but also of "too interconnected" or "too intertwined to fail" financial systems and "too correlated to fail" financial systems. An example of "too intertwined to fail" is what happened, when Lehman Brothers collapsed. The collapse of one bank leads to the collapse of financial institutions all around the world.

This is an example of what economists refer to as "an externality," where one bank, one firm, one financial institution does have big consequences for others. The failure of one bank leads other banks to fail and then eventually leads the whole economy to fail.

And there are inherent reasons why it's very difficult to price these externalities, to take these externalities into account, to make the individuals fully respond to these externalities.

I was the chief economist of the World Bank during the East Asia Crisis. In that period in Indonesia and Korea and Thailand, there were systemic bankruptcies, and in a couple of these countries almost 50 per cent of the companies in the country were not able to pay what was owed, and in the others, it was 70 per cent. That meant one had to think about how the bankruptcy of one enterprise or one bank leads to the bankruptcy of others.

And that lead to some research that I did with my colleague Bruce Greenwald and another group of researchers headed by Franklin Allen and Douglas Gale at Wharton Business School at the University of Pennsylvania examining networks of financial institutions and how, if you depended on the structure of the network, they were interlinked among themselves and interlinked with firms, how robust the financial system would be [16–18].

So these studies were done in 2001, 2003 and the early part of the decade well before the financial crisis. We wrote that everybody really has to pay a lot of attention to the nature of the financial structure. Unfortunately, the central banks, with one exception, paid no attention. The only central bank that paid any attention to this research was the Bank of England, and it was only their research department. Andrew G. (Andy) Haldane[8], who was a director of the research department at the Bank of England, understood what was at stake here. Well, the consequences of not paying attention to this were very, very severe.

Many of the macroeconomic models used by the central bankers did not even have banks in them. It was quite remarkable because if you did not have banks, you wouldn't have central banks. So there was a kind of cognitive dissonance: How could you have a model that didn't recognise the importance of banks? But even when they had banks, they used the concept of a *representative bank,* as if all banks could be aggregated into a single bank [19]. But we argued that that was wrong, that you needed to look at the nature of the financial structure, of how they

[8] A.G. Haldane is now the Chief Economist and Executive Director, Monetary Analysis & Statistics at the Bank of England.

were linked, whether they were what we call *sparse linkages* or *dense linkages*.

And we argued that some of the changes that were going on were helping the system to absorb small shocks. However, if you got a big shock, the whole system would collapse.

I asked people at the New York Federal Reserve whether they knew that when Lehman Brothers went down, or it could have been any other bank, what the consequence for the whole financial system would be. And the answer was, "No." It was really quite remarkable because during the period from the breaking of the real estate bubble through 2007, beginning of 2008, everybody in New York City knew that there would be a failure of a major bank. We had a debate about which of the banks would fail, but we felt very confident that one of the banks would fail. And we thought it was very important for people at the New York Federal Reserve to know if that happened, what the consequences would be for our entire financial system. Moreover, they never bothered to research it to figure this out.

So the important point is that financial structure does matter and this itself has become an important subject for many researchers. Today, there is a vast literature that has now developed trying to understand what are good, robust financial structures, structures that have financial stability versus those that do not [20–23].

There is a broader question that had to be asked: The banks behaved badly, but why was that? How do we explain their behaviour? And there are two sets of problems. One is the incentives at the institutional level. I mentioned one of those problems, that is, too big to fail, or too intertwined to fail, where the bank did not feel the consequences of undertaking too much risk because the government absorbed the downside risk.

But there was another problem — the individuals who make the decisions at the bank. The executives, the bankers, they themselves did not bear the full consequences of their decisions. It is a problem that is now referred to as the problem of corporate governance — the problem of the misalignment of incentives of individuals with those of the organisation and more broadly those of society.

It was a problem that my research in the economics of information helped expose, because what I pointed out was that in the presence of imperfect and asymmetric information, you have to delegate.

If you are the owner of the firm, you cannot make all the decisions. You delegate it to somebody below you, to the managers. But there you have a problem: If you delegate, you have to make sure that their behaviour is in line with your interest. And the basic theory was with imperfect information you could never do that perfectly. And the question was how imperfect was the alignment.

After the crisis, we had hearings in Congress. Alan Greenspan had been the chairman of the Federal Reserve at the time when a lot of the bad lending practices occurred. Alan Greenspan said he was surprised that the bankers had not managed the risk better. But I was surprised that he was surprised. Because, if he had looked for a minute at the incentive structures facing the bankers, he would have expected them to undertake excessive risk.

There are stock options, which meant that when things went up they did very well, and when things went down, they did not pay any price. So, just as the banks got only the upside risk, the bankers got only the upside risk of the bank. It was a doubling of mis-structuring of incentives. They encouraged short-sighted behaviour — an excessive risk-taking. So, it is not a surprise, given both the institutional incentives and the managerial incentives, that here was excessive risk-taking.

And, as a broader issue that I will come back to a little bit later, is the difficulty of aligning the incentives of the bankers and management more broadly with the interest of society for long-term economic growth. The fact that managerial incentive schemes are excessively short-term in focus means that it is very hard to sustain long-term economic growth.

There were other aspects of adverse behaviour besides the excessive risk-taking that I have just described. The financial sector is often in a position to exploit market power, to exploit asymmetries of information and individual vulnerabilities. Information asymmetries mean that somebody knows something that others do not know. The business of the financial sector is to know, is to gather information, so they often have a lot more information than other people. It is not only according to the principle Know Your Customer (alternatively known as know your client) or simply KYC.

Modern behavioural economics, which has been a subject of two of the recent Nobel prizes[9], has identified the importance of irrationalities and individual vulnerabilities.

One of the things that concerns me a great deal these days is that AI and big data may enhance these potentials

[9] Richard Thaler in 2017 and Robert Shiller in 2013.

because it means that they can gather a lot more information and use that information to exploit individual vulnerabilities. And that is why there have to be strong regulations to prevent these abuses.

A list of abuses, which I mentioned earlier, include market manipulation, incentive trading, predatory lending. Some of these we were not aware of until after the crisis, like the foreign exchange manipulation that many banks were engaged in.

So it was predictable, and it was actually predicted, that deregulation would lead to a wide range of abuses. What was remarkable was that for 40 years after the Great Depression we had no financial crises. From around 1930 until the 1980s, almost a half-century, we had no major crisis. And the reason, I think, was that we had good regulation.

But then people made the wrong inference. They said, because we have had no financial crisis we do not need regulation. Of course, if you have good regulation you don't see the kinds of excesses that lead you to need regulation, and so they stripped them away.

And it was when we began a deregulation process that we began to see a whole variety of abuses including the financial crisis, but also those kind of abuses that I described before.

2. PROMOTING POSITIVE BEHAVIOUR

Much of the discussion in the years after the 2008 crisis focused on how we stop this kind of bad behaviour, like excessive risk-taking. The interesting thing is that there been a lot of good discussion on how we actually get the financial sector to do what it is supposed to do. That is to say, if the financial sector does nothing but exploit people than why have it at all? There is a reason we have a financial sector. As I said, no country has been successful without a well-functioning financial sector, and I described what it is the well-functioning financial sectors are supposed to do. The question is, how we can get the financial sector to actually do what it is supposed to do?

The hope was that somehow, by curtailing the profitable anti-social activities, we would encourage them to return to more other traditional activities. We could have done a lot more to encourage positive behaviour. For instance, we could have or should have made providing lending to small businesses a condition for the borrowing of funds or access to the central bank 'window'. Instead, even though the IMF and the World Bank put conditions on all the loans and the US Treasury always makes a set of conditions when the IMF and the World Bank make a loan, no conditions were put on the money, that 700 billion dollars that I mentioned, that we gave to the banks.

And what did they use that money for? To pay out dividends and bonuses, but not lend to small businesses. And that was one of the reasons the economic crisis was so severe.

An exciting aspect of the structure of America's financial system is that there is one part of our financial system that actually works well.

An exciting aspect of the structure of America's financial system is that there is one part of our financial system that actually works well. And that is cooperative banks. We shall call them credit unions. The credit unions did not engage in predatory behaviour because they are owned by the people who put their money in. They are owned and managed by their members, all of whom have accounts at the bank. It is why they never engage in excessive risk-taking, and after the crisis credit unions were the only part of the financial system that continued to lend and increase their lending in fact to small businesses. There are thousands of credit unions in the United States holding assets ranging from over 10 billion dollars to under 1 million dollars. Credit unions may be chartered under state or federal law. Credit unions are not-for-profit organisations to serve their members rather than to maximise corporate profits.

However, there is a broader problem in lending that I want to draw attention to. After the financial crisis Ben Bernanke — I don't mean to pick on him in particular, but being the Chairman of the Federal Reserve gives you a position of saying quotes that people remember — he said that the world faced a *savings glut*. He said the problem was that there were too much savings.

Having been a chief economist of the World Bank, I could not understand that because when I looked around the world, I saw a shortage of savings. We needed money for investment in infrastructure, we needed it for investment in education, and health, and technology — every area I could see — we needed more investment funds. So how could he say we had a surplus of savings? It seems absurd.

Well, there really is a problem. Many of society's major problems require long-term investments. Long-term investments are needed to retrofit the economy for climate change, for infrastructure, and much of the world's funds are long-term: the sovereign wealth funds, the pension funds. However, between the long-term savers and long-term investors' needs exist short-term financial markets, with benchmarks and incentives focused on the short term. So, by putting these short-term financial institutions between the long-term savers and long-term investors, you get a kind of paralysis. You have got a savings glut.

And what we need now is to encourage more long-term thinking in the financial markets. And part of this is a need for more public financial institutions. It brings me to the role of development or infrastructure of green banks. Frankly speaking, the attitude of economists, of official institutions actually towards development banks, has changed very dramatically in the last twenty-five years.

It used to be that the World Bank and IMF always criticised development banks (aka *development finance institution* (DFI) or *development finance company* (DFC)). It was a curious criticism because they were development banks, but they said they had a monopoly on being a good development bank, and other development banks were not going to be good. Well, now as we look around the world, there are a large number of very successful development banks. And it is not just limited to developing countries. Many developed countries have successful development finance institution (banks). However, let me make a point here: There are problems sometimes because it is not an automatic recipe — you have to do it well.

The largest development bank is the European Investment Bank, which had several decades of good investment. And now, several new development banks are being founded with a particular focus on climate change. Russia was one of the founders of the New Development Bank, which is called the BRICS Bank, which is flourishing now. During the sixth BRICS Summit in Fortaleza (2014), the leaders signed an agreement establishing the New Development Bank (NDB). The inaugural meeting of the Board of Governors of the NDB was chaired by Russia and held on the eve of the Ufa Summit on 7 July 2015, when the Bank formally came into existence as a legal entity.

Following that, the Asian Infrastructure Investment Bank (AIIB), headquartered in Beijing, was founded and began operations in January 2016. It has now grown to 102 approved members worldwide. It is a multilateral development bank with a mission to improve social and economic outcomes in Asia.

But even my state, New York State, has founded a new development bank focusing on climate change, which has proven to be very successful. NY Green Bank is an agent for greater private-sector investment in sustainable infrastructure with the mission to accelerate clean energy deployment in New York State by working in collaboration with the private sector to transform financing markets.

Summing up, all these new banks can take advantage of new instruments, broader mandates, new governing principles, and play a pivotal role in putting together new projects. This perspective of the positive role that development banks can play in mobilising funds for important social needs really contrasts with what's been happening in the private financial sector.

Now I will talk more about the United States and some of the Western European countries.

Traditionally, many of the textbooks that you probably used talked about banks as "intermediating." They take funds from households (entities) that have a surplus of funds and give them to those enterprises that need the funds to make investments to create jobs. Namely, that is called intermediation. Well, if you look at the data for the United States, the banks have been dis-intermediating. The flow of funds is going the opposite way. For the last twenty years, money has been going from the firms to the household sector.

So the money that was inside the firm, that could have been used for investment, for creating new jobs, instead has gone to rich individuals who own the firm and that has been one of the reasons why we have had weak aggregate demand and slow economic growth.

Just as an example, we had a tax bill in December 2017[10]. A Trump administration staffed by plutocrats — most of who gained their wealth from rent-seeking activities rather than from productive entrepreneurship — have

[10] The *Act to provide for reconciliation pursuant to titles II and V of the concurrent resolution on the budget for fiscal year 2018,* Pub.L. 115–97, is a congressional revenue act of the United States originally introduced in Congress as the Tax Cuts and Jobs Act (TCJA), that amended the Internal Revenue Code of 1986. Signed into law by President Donald Trump on December 22, 2017. Four winners of the Nobel Prize in Economics have spoken out against the legislation: Joseph Stiglitz, Paul Krugman, Richard Thaler, and Angus Deaton.

rewarded themselves. It was a big gift to corporations and the ultra-rich. It lowered the taxes on billionaires and corporations. It was a very peculiar tax bill because the problem facing the United States is huge inequality. It raised taxes on the majority of people in the second, third and fourth quintiles, the broad middle class, and lowered taxes on billionaires and rich corporations. If inequality were a problem before, enacting the tax reform will make it much worse [24].

Moreover, the promise was that it was going to lead to more investments. It didn't. A little bit. Most of the money was used to have share buybacks. Share buybacks are just a way of distributing money from the company to shareholders in a manner that is subjected to less taxation. Last year, a trillion dollars went to share buybacks. That is money that could have gone into investment but did not; could have gone into increased wages, but did not.

It has become such a big problem that there are now a number of proposals to regulate or even forbid share buybacks. The United States — and much of the world — confronts today four central problems: widening income inequality; growing job insecurity; climate change; and anaemic productivity growth. There is an important positive agenda that the financial sector could be encouraged to do. It has not been doing that; it has been doing a variety of excessive risk-taking, a variety of dis-intermediation instead.

Mark it well: America's large corporations are sitting on a couple of trillion dollars. And the lack of investment is not because profits, either before or after-tax, are too low; after-tax corporate profits as a share of GDP have almost tripled in the last 30 years.

3. CURBING RENT-SEEKING

I want to elaborate on two other negative aspects of the financial sector: the rent-seeking behaviour that I alluded to at the beginning and the role of the financial sector in tax avoidance.

Curbing rent-seeking is one of the themes of my new book. In this book, I focus attention on trying to explain why the United States' growth has slowed down, why inequality has grown. And a key part of that explanation is the growth of this rent-seeking behaviour. There is increasing empirical evidence supporting that view. The financial sector has excelled in this kind of risk-taking and rent-seeking, and one of the particularly adverse aspects of it is *market power*.

Banks have significant market power in many arenas, including, most importantly, the means of payments. Currency is a means of payment, but increasingly we use electronic mechanisms. If you think about it, you know that now most of the purchases are made with debit cards or credit cards or over your smartphone. If you think about how much it costs to move money electronically when you go to the store and want to buy something, how much it costs to transfer money from your bank account to the store's bank account, it costs a fraction of a penny. How much do banks charge a merchant? One, two, three per cent, sometimes even more than that — four per cent.

> ***Banks have significant market power in many arenas, including, most importantly, the means of payments.***

So, if you buy something, say, that costs five thousand dollars, you have to pay 'transaction costs'. The merchant may have to pay several hundred dollars for something that costs a fraction of a penny. Therefore, the banks in the United States alone make tens of billions of dollars in monopoly profits from this every year. That is an example of market power, which transfers money from ordinary citizens to the banks.

And that increases inequality because transaction costs interfere with the efficiency of the economy; it is a waste of resources. The result is high profits, low innovation, and almost no entry for strangers.

However, there are alternatives; for instance, in Australia, they have actually prohibited the anti-competitive contracts that underlie the maintenance of this monopoly power. In the United States, we regulated the fees for debit cards, but not for credit cards; and even when we regulated the fees for the debit cards, we allowed the Federal Reserve to set those fees, and they set them much too high, and the judge said it, it was much too high, but they went ahead and did it anyway[11].

[11] The Durbin Amendment to the 2010 Dodd-Frank financial-reform legislation curbs the excessive fees charged for debit cards only to a very limited extent, and it did nothing about the much bigger problem of excessive fees associated with credit cards.

But the most interesting example is what's going on in India. India realised that the costs of these transactions are essentially zero, so they said, "Why don't we make them zero?" Together the banks created a cooperative framework providing payment mechanisms for free. That should be a basic public function in one way or another.

If you are selling a financial product, you have to put the buyer's interest first.

The second example of banks' rent-seeking is their benefiting from the power of issuing money, sometimes called "seigniorage". It's a major source of profits and it rests on the trust in government and its ability to build up banks in trouble. The question is: How can we get the government to appropriate these rents for public purpose?

One way of doing that is auctioning off the right to issue credit. It could be easily implemented through a system of digital currency, and this is particularly true, as some countries, for example, Sweden, have gone to an almost totally digital system of payments. But I should emphasise that there's been a lot of discussions recently about cryptocurrencies — in particular, Libra that Facebook has been trying to promote — that I think should not be allowed [25]. The last thing we need is a new vehicle for nurturing illicit activities and laundering the proceeds, which another cryptocurrency would almost certainly turn out to be.

The entire thrust of the regulation of the financial sector is to promote *transparency*. Transparency is essential for a well-functioning competitive market, for preventing nefarious activities and for macroeconomic regulation. And the idea that you could have a cryptocurrency (which means 'secret' or 'anonymous') that is transparent is obviously an oxymoron. So, that is not the answer; the real answer is the approach that India has taken.

There are a couple of references here [26, 27], of recent works that have tried to highlight the ability to use digital currencies as an alternative, if we can break the monopoly power of the banks.

4. TAXATION

Another negative role that the financial sector has performed in recent years is tax avoidance. A modern society needs a strong tax base for a wide range of public expenditures, from basic research and technologies to the other elements that I mentioned before — infrastructure, education, health, and social protection.

But the corporate tax base has been eroded, and the financial sector has played a considerable role.

They have figured out how to take advantage of globalisation to avoid taxation. Apple is an example; it uses the same cleverness that is also used to produce the telephones that so many of you enjoy; it uses that same cleverness to avoid paying taxes. They use the same tricks that allow some of the world's largest companies to pay minuscule taxes, in some cases far less than 5 per cent of their profits, giving them an unfair advantage over small local businesses. And in Ireland, they got their tax rate down to something like point two or lower per cent of their profits. And they took all of their profits out of the rest of Europe and moved to Ireland. And when that got questioned, they moved it to Jersey. So, they are dedicated to not paying the fair share of taxes, and they work very hard on it.

But Apple is not alone. Many of the major corporations (among others, Google, Facebook, Microsoft, Amazon, Caterpillar) have used globalisation to avoid paying taxes. Some of you may know that there is a considerable effort by the OECD/G20 project to limit the extent of tax avoidance, but it has only scratched the surface. It is called "The Base Erosion and Profit Shifting" (BEPS) Project, where the corporations shift their profits around to a low-tax jurisdiction. The project aims to mitigate tax-code loopholes and country-to-country inconsistencies. So corporations cannot shift profits from a country with a high corporate tax rate to countries with a low tax rate[12].

Capital income should be taxed. We will review certain theoretical results — in particular, those of Atkinson and Stiglitz [28], Chamley [29], and Judd [30] — implying no capital income taxes and argue that these findings are not robust enough to be policy-relevant. The taxation of very high earners is a central aspect of the tax policy debate not only for equity reasons but also for state revenue raising.

But the fundamental problem is they also transfer a price system that has been employed now for almost 100 years, and what is needed is far more fundamental reform. The problem is that tax competition has resulted in a race to the bottom, which has been especially damaging to developing countries. There is a widespread misunder-

[12] See also Financial Secrecy Index, 2018 at https://en.wikipedia.org/wiki/Financial_Secrecy_Index.

standing of the incidence of corporate income tax and its effect, and that was evident in the discussion of the corporate tax cuts in the United States in 2017.

After the brief sugar high of the stimulus of the growth, the growth is already under 2 per cent (1,9 per cent), and it is expected to slow with negligible effects on wages, a small impact on investment, and it is actually predicted that GDP within a few years will be lower than it would have been without the tax cut.

So, this is a really good example of where badly designed tax bills, even tax cuts, can actually lead to lower GDP, lower economic growth. And the key flaw in the conventional analysis was the failure to recognise certain provisions of the Tax Code: the tax-deductibility of interests and depreciation allowance and write-off of investments. And the result of this is that with interest deductibility, the marginal cost of investments is reduced by the same amount as the marginal return on investments. So, there is actually no distortion in investment. The implication is the corporate income tax is close to a tax on pure profits and, in that sense, is not distortionary, but with positive distributive effects.

If we take it globally, there is no place for only piecemeal fixes. Indeed, the world is facing multiple crises — including climate change, inequality, slowing growth, and decaying infrastructure — none of which can be addressed without well-resourced governments. Unfortunately, the current proposals for reforming global taxation simply don't go far enough. And these are just some of the references that have discussed these points [31–34].

5. A DIRECT, POSITIVE ROLE FOR GOVERNMENT

Most of the discussions about the role of "Government" are focused, firstly, on preventing bad behaviour through well-designed regulations effectively enforced and, secondly, on encouraging good behaviour on the part of the private sector. But the government has an important, and more direct, positive role. Of course, everybody recognises the role in monetary policy, where it is the lender of last resort. I have already mentioned the role in the development and in the rebuilding of infrastructure through development banks. There is a further role, what is sometimes called "the public option", by providing more choice to consumers, increasing competition, innovation, lowering prices for financial services, growing returns on financial products. Now, obviously, for the government to perform these roles, it has to have good governance. It won't work in all countries, but in some countries, it has proven very effective.

For instance, one example is the student loan program in Australia — income-contingent loans. All the students in Australia get a government-provided student loan that is income-contingent. So, what they repay depends on how well they do. If they do very well, they pay back a lot. If they don't do so well, they do not. But that means that they can still go to university, and if they want to choose to go into a low-income profession like being a professor, they can do that. But if they are going to go into a high-income profession like a banker, they can do that, but they have to pay back more. And that has had a very positive role in increasing opportunities for everybody in Australia without taking a hit on the government budget for good tuition.

MORTGAGES

It seemed remarkable to me that we waited so long to do anything about the foreclosure problem, which, in a sense, was at the root of the financial sector's problem. In many cases, we have on our hands a social and human tragedy. For example, as of August 2014, the foreclosure rate was 33.7 per cent, 1.7 per cent up from the last year. The rise in foreclosure activity has been most significant in New York and New Jersey, the two most densely populated areas in the USA. The idea of a public option is now being discussed in the United States and concerns a number of different areas, particularly related to finance, and one these areas is mortgages. In my latest book, I also discuss the idea of a public mortgage financing system that could access an individual's I.R.S. (Internal Revenue Service) and Social Security data despite the current low-trust political environment. When you think about the mortgage, there are two pieces of critical information: income data and the value of the house. Both of these pieces of data are in the public domain, income tax data and housing transaction data.

An argument is that a conventional mortgage should be available, for instance, to anyone who has paid taxes regularly. There are economies of scope for the collection of the payments that can be done through the tax system. And this would mean that mortgages would be available to everybody at a much lower cost than they are today.

RETIREMENT

Somewhere an argument's being made for a public option in retirement. Indeed, the Social Security Administration is far more efficient at disbursing retirement benefits than private pensions. The problem is that retirement products are very complex. Individuals, when they are 20, 30, 40 and when they are thinking about retirement — 20, 30, 40 years from now — they don't always fully understand what the world might look like. That gives an opportunity to those who would take advantage of individual vulnerabilities and take advantage of them.

President Obama proposed that those selling financial products (retirement products) have to satisfy a *fiduciary standard* of financial responsibility. In other words, you cannot have conflicts of interests. If you are selling a financial product, you have to put the buyer's interest first. But, remarkably, the financial sector said, "We cannot make profits if we do not have conflicts of interest if we are honest." And they opposed this particular provision.

The public option could do well for those who want to have higher retirement benefits than are provided by the public program, to increase their contributions with benefits increased commensurately. And one could actually design a range of financial products with different risk profiles. And again, taking advantage of economies of scale and scope, and avoiding the potential for abuse.

And another example. When I was the chairman of the Council of Economic Advisors (under President Clinton), we proposed a product called inflation-indexed bonds, that would help people face inflation. However, the US Treasury and Wall Street opposed it. At first, I was surprised because our analysis said that not only would it make people have a more secure retirement, it would also actually reduce borrowing costs for the government. It was a win-win situation. But they opposed it because they discovered that if people have these products that protect them against inflation, they buy them and hold them until their retirement. They do not trade, and Wall Street does not make money by transaction costs from these trades.

6. RESTORING TRUST

Remember, at the beginning of this talk I said the way we responded to the financial crisis led not only to mistrust of the financial system but to mistrust of institutions more generally. Well, not a surprise, the bankers behaved in a morally reprehensible way, they took advantage of others and their positions of trust. Many of these bankers, when they were students of mine, seemed just like other people. And the question is — what happened? What turned these people who seemed to be ethical and nice into people who behaved so badly?

Well, this illustrates some of the dangers of the standard economic model. It assumes that individuals are rational and selfish; there is no room for altruism. However, much of modern behavioural economics, including behavioural finances, explains that humans are less rational than that model assumes. They are also less selfish. Based on these standard models, the IMF and U.S. Treasury promoted the diversification of risks. It would spread the risk widely, and that would make the system more stable. As a matter of fact, the risk was not distributed and spread, but it was propagated and amplified. There was not a diminution of risk through diversification, but rather an amplification through *contagion*. Like the domino effect, diversification simply turned what could have been contained cases of financial failure into a global pandemic.

A number of studies revealed two things: The longer people study economics, the more they become like the economic model assumes they would be. That is to say, the longer people study economics, the more selfish they become. And also, those who are more like the economic model assumed are more attracted to economics and finance, but bankers maybe even more than economists in general.

I am going to illustrate this by some recent research [35, 36] that was done in experimental behavioural economics. When bankers were reminded that they were bankers, they were more dishonest.

So, the experiment was a very simple one, done in Switzerland. I cannot tell you whether it would apply here or in the United States, but I think the suggestion is that it is actually more general. They went into a room, and they tossed a coin. And you tossed the coin ten times, and you reported how many heads or how many tails you got. And it was totally in secret; your pay-offs were related to the outcome of the tosses.

Now we know, on the basis of probability, what they should report. We know how many should report "1 heads-9 tails", "2 heads-8 tails" and so forth. So, we know what the probability distribution should look like; we also know what they would look like if they were totally dishonest because they would report the answer that gave them the highest returns.

The interesting thing about most people is they are not quite as honest, they are not fully honest, but they are not fully dishonest either. They don't take as much money as they could, but they are not fully honest. We can test how honest they are, we can contrast what the probability distribution should be with what they report. And the interesting thing is if we contrast what probability distribution should be with what they report when you remind bankers that they are bankers, they turned out to be more dishonest.

So, the question is — why did the bankers' behaviour change?

The argument in experimental behavioural economics is that the norms of the industry may permit or encourage dishonesty. A behaviour shift may have happened even outside the bankers' awareness. When you reminded the banker who he was, what is called "cueing the banker's identity," it increased this dishonest behaviour, even in the novel setting of the experiment, since the priming question unconsciously calls up these perspectives and habits associated with the banking 'compartment' of the individual's life. In another experiment, with non-banker participants, it was shown that cues to banking have no influence on dishonest behaviour.

This is a kind of experiment that has been done over and over again and is replicable.

There are some broader insights from modern economic theory about how the pursuit of profits leads to societal well-being only when social and private costs and benefits are perfectly aligned. Whenever information is imperfect and asymmetric, they are not well-aligned, which is why the market economy is not in general Pareto efficient.

One of the most important ideas in economics is called "Adam Smith's invisible hand". An idea was that the pursuit of self-interest and profits leads the economy, as if by an invisible hand, to the well-being of society. And what my colleague Bruce Greenwald and I showed is that the reason the invisible hand often seems invisible is that it is not there. That is to say that when information is imperfect, risk markings are incomplete, competition is imperfect — all these conditions, which are true all the time,— markets are not in general efficient.

And this, of course, is a major change in thinking from the world that Adam Smith (presented) in the first welfare theorem. I began by emphasising the problems of corporate governance. The typical incentive pay systems are neither efficient nor effective. Those in the financial sector were actually counterproductive, leading to short-termism and excessive risk-taking. In a way, academic economists should be very sensitive to this point: non-material incentives, professional standards, are often far more effective. Most of us are not motivated most of the time by just material incentives. It is professional standards that really drive us.

Societies and economies in which norms are taken into account, as well as the impact on other externalities, perform better; likewise, societies and economies where there is less inequality also perform better. Inequality gives rise to negative externalities.

CONCLUDING REMARKS

The rules of the game matter. In the decades after 1980, the US and much of Europe changed the rules of the game in ways which led to a less well-performing financial sector, with more inequality, more instability and lower growth. Only the financial sector seemed to gain.

Societal norms and trust all matter. A change in norms of finance towards a more exploitative behaviour, far different from what it was 60 years ago, has helped undermine trust in the institutions. And the social contract has been broken. Bankers were given 'privileges' — limited liability, rights to create credit by government, control over the means of payments —and they abuse those privileges to serve themselves rather than society more generally, at great cost to our economy, our society and our democracy.

Underlining all this is a significant disparity between social and private returns and deregulation that gave them the ability to pursue the private returns at the expense of the rest of society. That is why, returning to the remarks I gave in the very beginning, in spite of the growth of the financial system in the last 40 years, economic performance deteriorated, growth slowed and inequality increased, and the world eventually faced the worst crisis since the Great Depression. The financial sector played a large role in these failures, both because of what it did and what it failed to do.

There are reforms in the economic and financial system that can make the financial sector perform better — better serve the roles that it needs to play. And what I have tried to do is outline some of the major reforms and to show how research in economics over the past 30 years has helped us understand both the limitations — the failures of other financial systems — and what we can do to make it work better.

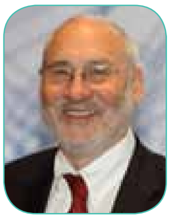
Most importantly, restoring trust in the financial system is essential if it is going to perform the role that it should play in the economy and society. And that will require changes in laws, in regulations, governing setting standards, and in norms.

REFERENCES

1. Stiglitz J.E. The current economic crisis and lessons for economic theory. *Eastern Economic Journal*. 2009;35(3):281–296. DOI: 10.1057/eej.2009.24
2. Stiglitz J.E. Ten years later: Keynote address. Roosevelt Institute Working Paper. September 2018. URL: https://www8.gsb.columbia.edu/faculty/jstiglitz/sites/jstiglitz/files/Roosevelt%2010-Years-After-the-Financial-Crisis.pdf
3. Greenwald B., Stiglitz J.E. Towards a new paradigm in monetary economics. Cambridge, New York: Cambridge University Press; 2003. 328 p.
4. Stiglitz J.E. Moving beyond market fundamentalism to a more balanced economy. *Annals of Public and Cooperative Economics.* 2009;80:3:345–360. DOI: 10.1111/j.1467–8292.2009.00389.x
5. Stiglitz J.E. The price of inequality: How today's divided society endangers our future. New York: W.W. Norton & Co.; 2012. 560 p.
6. Battiston S., Delli Gatti D., Gallegati M., Greenwald B., Stiglitz J.E. Credit chains and bankruptcy propagation in production networks. *Journal of Economic Dynamics and Control*. 2007;31(6):2061–2084. DOI: 10.1016/j.jedc.2007.01.004
7. Delli Gatti D., Gallegati M., Greenwald B., Russo A., Stiglitz J.E. Business fluctuations and bankruptcy avalanches in an evolving network economy. *Journal of Economic Interaction and Coordination*. 2009;4(2):195–212. DOI: 10.1007/s11403–009–0054-x
8. Gallegati M., Richiardi M.G., Greenwald B., Stiglitz J.E. The asymmetric effect of diffusion processes: Risk sharing and contagion. *Global Economy Journal*. 2008;8(3). DOI: 10.2202/1524–5861.1365
9. Miller M.H., Modigliani F. The cost of capital, corporation finance and the theory of investment. *The American Economic Review*. 1958;48(3):261–297.
10. Stiglitz J.E. A re-examination of the Modigliani-Miller theorem. *The American Economic Review*. 1969;59(5):784–793.
11. Stiglitz J.E. On the irrelevance of corporate financial policy. *The American Economic Review.* 1974;64(6):851–866.
12. Grossman S.J., Stiglitz J.E. Information and competitive price systems. *The American Economic Review*. 1976;66(2):246–253.
13. Grossman S.J., Stiglitz J.E. On value maximization and alternative objectives of the firm information and competitive price systems. *The Journal of Finance*. 1977;32(2):389–402. DOI: 10.1111/j.1540–6261.1977.tb03278.x
14. Grossman S.J., Stiglitz J.E. On the impossibility of informationally efficient markets. *The American Economic Review*. 1980;70(3):393–408.
15. Grossman S.J., Stiglitz J.E. Stockholder unanimity in making production and financial decisions. *The Quarterly Journal of Economics*. 1980;94(3):543–566. DOI: 10.2307/1884584
16. Greenwald B., Stiglitz J.E. Pecuniary and market mediated externalities: Towards a general theory of the welfare economics of economies with imperfect information and incomplete markets. NBER Working Paper. 1984;(1304). URL: https://www.nber.org/papers/w1304.pdf
17. Allen F., Gale D. Financial contagion. *Journal of Political Economy.* 2000;108(1):1–33. DOI: 10.1086/262109
18. Allen F., Gale D. Understanding financial crises. Oxford, New York: Oxford University Press; 2007. 320 p.
19. Stiglitz J.E. Where modern macroeconomics went wrong. *Oxford Review of Economic Policy*. 2018;34(1–2):70–106. DOI: 10.1093/oxrep/grx057
20. Benjamin B., Capponi A., Stiglitz J.E. Bail-ins and bail-outs: Incentives, connectivity, and systemic stability. NBER Working Paper. 2017;(23747). URL: https://www.nber.org/papers/w23747.pdf
21. Battiston S., Caldarelli G., May R.M, Roukny T., Stiglitz J.E. The price of complexity in financial networks. *PNAS. Proceedings of the National Academy of Sciences of the United States of America.* 2016;113(36):10031–10036. DOI: 10.1073/pnas.1521573113

22. Roukny T., Battiston S., Stiglitz J.E. Interconnectedness as a source of uncertainty in systemic risk. *Journal of Financial Stability*. 2018;35:93–106. DOI: 10.1016/j.jfs.2016.12.003
23. Battiston S., Delli Gatti D., Gallegati M., Greenwald B., Stiglitz J.E. Liaisons dangereuses: Increasing connectivity, risk sharing, and systemic risk. *Journal of Economic Dynamics and Control*. 2012;36(8):1121–1141. DOI: 10.1016/j.jedc.2012.04.001
24. Stiglitz J.E. Déjà Voodoo. Project Syndicate. Oct. 4, 2017. URL: https://www.project-syndicate.org/commentary/republican-tax-reform-voodoo-economics-by-joseph-e — stiglitz-2017–10?barrier=accesspaylog
25. Stiglitz J.E. Thumbs down to Facebook's cryptocurrency. Project Syndicate. July 2, 2019. URL: https://www.project-syndicate.org/commentary/facebook-libra-facilitates-crime-money-laundering-by-joseph-e-stiglitz-2019–07?barrier=accesspaylog
26. Rogoff K. The curse of cash: How large-denomination bills aid crime and tax evasion and constrain monetary policy. Princeton, NJ, Woodstock: Princeton University Press; 2016. 296 p.
27. Stiglitz J.E. Macro-economic management in an electronic credit/financial system. NBER Working Paper. 2017;(23032). URL: https://www.nber.org/papers/w23032.pdf
28. Atkinson A.B., Stiglitz J.E. The design of tax structure: Direct versus indirect taxation. *Journal of Public Economics*. 1976;6(1–2):55–75. DOI: 10.1016/0047–2727(76)90041–4
29. Chamley C. Optimal taxation of capital income in general equilibrium with infinite lives. *Econometrica*. 1986;54(3):607–622. DOI: 10.2307/1911310
30. Judd K.L. Redistributive taxation in a simple perfect foresight model. *Journal of Public Economics*. 1985;28(1):59–83. DOI: 10.1016/0047–2727(85)90020–9
31. Stiglitz J.E. Taxation, corporate financial policy, and the cost of capital. *Journal of Public Economics*. 1973;2(1):1–34. DOI: 10.1016/0047–2727(73)90008-X
32. Stiglitz J.E. The corporation tax. *Journal of Public Economics*. 1976;5(3–4):303–311. DOI: 10.1016/0047–2727(76)90022–0
33. Korinek A., Stiglitz J.E. Dividend taxation and intertemporal tax arbitrage. *Journal of Public Economics*. 2009;93(1–2):142–159. DOI: 10.1016/j.jpubeco.2008.08.001
34. Stiglitz J.E. No more half-measures on corporate taxes. Project Syndicate. Oct. 7, 2019. URL: https://www.project-syndicate.org/commentary/oecd-proposal-multinational-tax-avoidance-by-joseph-e-stiglitz-2019–10?barrier=accesspaylog
35. Cohn A., Gesche T., Maréchal M. Honesty in the digital age. University of Zurich. Department of Economics. Working Paper. 2018;(280). URL: http://www.econ.uzh.ch/static/wp/econwp280.pdf
36. Cohn A., Fehr E., Maréchal M.A. Business culture and dishonesty in the banking industry. *Nature*. 2014;516:86–89. DOI: 10.1038/nature13977

ABOUT THE AUTHOR



Joseph E. Stiglitz **—** 2001 Winner of Nobel Memorial Prize in Economic Sciences, Professor, Columbia University, New York, United States

The article was submitted on 14.01.2020; revised on 03.03.2020 and accepted for publication on 10.03.2020.
The author read and approved the final version of the manuscript.